

ABSTRACT

A method and system for precisely centering a workpiece within a cylindrical bore such that the center of the workpiece is coaxial with the central axis of the bore. An arbor is used within the cylindrical bore to sense and calculate the location of the central axis. The position of the workpiece is also sensed so that it can be aligned with the central axis. A computer system is used to perform the calculations and provide an indication of alignment of the workpiece and the central axis. The position of the central axis and the workpiece are found via a location determining system that may incorporate electromechanical and optical position sensing systems. For instance, a plurality of light transmitters and light receivers may be used to generate and transmit beams of light used in determining positions. The method has particular application to free piston machines, and particularly free piston coolers.